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EDUCATION AND INDUSTRIAL EFFICIENCY— DISCUSSION

H. L. GANTT: Professor Jones's paper is of extreme importance, because (1) he has demonstrated the fact that such general principles exist; (2) he has emphasized the great importance of industrial leadership, a subject that has never publicly received the attention which it deserves; (3) he has urged teachers of economics and business administration to regard the industrial manager not only as a ruler of matter and force, but as a leader of men. I shall discuss these three points in order:

1. *General Principles*.—He has made it perfectly clear that as all "administration" means directing the activities of men, the particular kind of activity is incidental, and subject to general laws. This being true, attention must be fixed primarily not on results but on methods which produce results.

To be sure, many of our most wealthy and hence powerful men of today have to a large extent ignored methods, demanding only results. Their success in accumulating wealth has been due in many cases not to proper methods, but has been achieved in spite of improper ones. In most cases they have not been so much producers of wealth as harvesters either of the wealth produced by others or of that wealth which but a few short years ago was, in this country, to be had for the taking.

This condition, however, is rapidly passing, for the amount of unappropriated wealth is fast decreasing, and the tendency of modern legislation is to secure to the individual the fruits of his own labor. Under such conditions it is to be expected that the direction of our affairs will gradually pass into the hands of those who most carefully conform to the correct principles of administration.

It thus becomes apparent that in the long run the material products of our industries are not so important as the human product, for from this product will arise not only our most valuable citizens, but many of our future leaders, who in turn will make industries.

2. *Leadership*.—The importance of leadership has been given all too little attention in the past, apparently for the reason that accidental conditions have in many cases been quite as effective in securing wealth as has leadership. Such opportunities, however, are no longer numerous, especially in our industries, and a study of industrial leadership is forcing itself upon us.

Professor Jones has made elaborate studies of leadership in war, about which we have more exact information than any other type of leadership, and finds that leadership in both war and industry are not only based on the same principles, but are equally important. Just as war is the great training school for those who are to make war, so industry is the great training school for those who are to create industry. Leaders in war and in industry hold the same relative importance in their respective spheres. If this is the case it is well for us to see what the great warrior of modern times has to say about the importance of leadership in war, and thus arrive at some appreciation of the importance of leadership in industry. Napoleon said:

In war men are nothing; it is the man who is everything. The general is the head, the whole of an army. It was not the Roman army that conquered Gaul, but Caesar; it was not the Carthaginian army that made Rome tremble in her gates, but Hannibal; it was not the Macedonian army that reached the Indus, but Alexander; it was not the French army that carried the war to the West and the Inn, but Turenne; it was not the Prussian army which, for seven years, defended Prussia against the three greatest powers of Europe, but Frederick the Great.

The historian in making this quotation stated that Napoleon reiterated a truth confirmed by the experience of successive ages, *that a wise direction is of more avail than overwhelming numbers, sound strategy than the most perfect armament*. Similarly in industry, *a wise policy is of more avail than a large plant, good management than perfect equipment*.

The historian goes on to say:

Even a professional army of long standing and old traditions is what its commander makes it; its character sooner or later becomes the reflex of his own; from him the officers take their tone; his energy or his inactivity, his firmness or vacillation, are rapidly communicated even in the lower ranks; and so far-reaching is the influence of the leader that those who record his campaign concern themselves but little, as a rule, with the men who followed him. The history of famous armies is the history of great generals, for no army has ever achieved great things unless it has been well commanded. If the general be second-rate the army also will be second-rate.

These facts in military history have their exact counterpart in industrialism, and the real problem of today is how to select and train, or rather how to train and select, our industrial leaders.

Professor Jones states the indisputable fact that the possession of wealth and, hence, power does not necessarily fit a man for

leadership. There is a general feeling, however, that because our industries have in the past been directed in an autocratic manner, autocracy will continue to be the rule, and that there is apparently no escape from it. This feeling seems to be quite widespread and to be substantiated by the marvelous industrial development of Germany under autocratic rule. While it is possible that autocracy in industry is the final stage, I do not think the case is by any means proven. Has not the development of industrial organization been in a large measure parallel to the development of political organization? In both we had individualism, then paternalism, and then tribalism, or something approximating it; next we had autocracy. In our political organization we have passed one step beyond—we, in this country, believe in democracy—and the great struggle now going on in Europe is largely a question as to whether democracy or autocracy shall be the final phase in the old world.

The marvelous efficiency of Germany as an industrial and military nation has claimed the attention of the whole world; but we must realize that Germany is the only nation which has made any serious attempt at national organization of industry. When, therefore, we compare the industrial organization of Germany with the industrial conditions of any other country, we are not comparing one organization with another, but a highly perfected organization with lack of organization.

In the summer of 1913 three hundred members of the American Society of Mechanical Engineers visited Germany at the invitation of the *Verein Deutsche Ingenieure*. We spent three weeks touring the country and visited most of their great cities, where we were entertained with the greatest possible hospitality and had thrown open to us many of their most successful industrial plants.

We were much impressed with what we saw, and the universal prevalence of system and order elicited our unbounded admiration. When, however, we came to the consideration of the industrial plants as units, we were in almost entire accord that, with the exception of a few industries, plant for plant, America had nothing to fear from Germany. This leads us, therefore, to ask if autocracy in industry is not just as much a phase in industrial development as we in this country consider it to be in political development.

As a matter of fact, during the past ten years it has been my effort to introduce methods of equal opportunity into industry and

to select leaders in the most democratic manner possible. I am pleased to say that the efficiency of the organization thus produced has seemed to be almost in direct proportion to the success in introducing democratic methods of selecting leaders.

Too little work has been done in this line, and there are too few results available to make any very strong statements, but the success so far attained is such as to make us feel that we are on the right track, and that the nation which first does away with autocracy and special privilege will take the lead in industrialism. The scientific method thrives best under democratic conditions, and our chance of getting proper industrial leaders is far greater when we have a whole people to choose from than if they are to be selected from any class.

Professor Jones's emphasis on the fact that in all problems of administration the most important element is the human element, compels acceptance of the democratic idea, for no manager can today attain the highest ideals unless he is thoroughly familiar with all the elements with which he has to deal. It is general experience that unless men are studied from a democratic standpoint the student fails to get a proper appreciation of the human element.

3. Teaching Business Methods.—Professors Jones's insistence that teachers of economics and business administration should regard the business leader as not only a ruler of matter and force, but as also a leader of men, is exactly right.

The attempt to show classes results which have been obtained is right, *if these results illustrate a general principle; but if the methods used have no underlying principle to connect them, they may result in convincing the student that a system of management is simply a series of isolated "stunts."*

This kind of teaching in college and out is in a measure responsible for the great army of men who call themselves "efficiency engineers," many of whom are not engineers at all, but simply "stunt" peddlers. Nevertheless they are doing some good, for the man who today buys a few valuable stunts at least learns that he does not possess all available knowledge, and may be led some day to apply the scientific method to his business. Nevertheless colleges should not cater to such a class, which is already large enough, but should prepare students to grapple with the basic industrial problem, namely, that of becoming so grounded in the principles of administration, which they can only do in industry

itself, that they may become the real industrial leaders of the future.

In conclusion, I may add there is another similarity between war and industry in the manner in which those responsible for success are most often hampered. Just as, in war, nobody denies that the military arm must be subordinate to the aims of diplomacy, so, in industry, the factory manager must serve the needs of the financier; but as, in war, it is a great mistake for the diplomat to undertake the control of the armies in the field, so, in industry, it often produces most detrimental results when the financier undertakes to usurp the duties of the manager. It is my belief that much of our inefficiency and many of our most serious industrial troubles are due to this very thing.

It is a well known fact that men who have power feel too frequently that they should themselves exercise it, not recognizing their lack of knowledge. We should, however, not be too critical of such people, for it took as great a man as Abraham Lincoln nearly three years to realize that a trained soldier could handle the armies of the United States more effectively than he could.

ISAAC A. LOOS:¹ When I first saw Professor Jones's paper, entitled "The Study of the General Principles of Administration," I was gratified, because its title seemed to me promise of a recognition of administration as a branch of economic science in German fashion. *Die Verwaltungslehre* is as much a branch of economic science as is *Finanzwissenschaft*.

But on reading through the paper I have not found any attempt to relate administration systematically, or even consciously, to economics. I believe, however, that we must regard administration as a branch of economic science just as we usually regard finance as a branch of economics. We should, moreover, make the twofold distinction between administration as public and private, just as we distinguish between public finance and private finance. The great principles underlying public and private finance on the one hand, and public and private administration on the other hand, are the same in each case. When public officers get too far away from those common principles underlying both public and private finance and administration, signs of corruption or perversion of the functions of public office appear; political incom-

¹ Not read at the meeting.

petence and inefficiency displace or replace economic competence and efficiency.

Administration is undoubtedly a branch of economic science, and a part of the historical development of economics. For the first broad recognition of this fact we must turn to the cameralists. In the writings of Justi and Sonnenfels, for example, we may find principles of administration elaborated as well as principles of finance.

Wherever we have a high degree of economic organization in public or private economy, there we have a theory and an art of administration. A scientific study of economic history will demonstrate this proposition.

Administration must be related to economics both in its generalized and specialized aspects. In its general aspects administration must be related to economics both through a course in general economic history and through the course which we usually describe as the course in Principles. Through these two courses the student should acquire that knowledge of,—that is, a general introduction to,—the general principles of administration to the description of which Professor Jones has devoted more than one half of the paper which he submitted to me. In its specialized aspects, administration may be given as a separate course. In this aspect, the study of administration may be offered in the junior or senior year after the courses above noted have been set up as prerequisites. These prerequisite courses should be supplemented as far as possible by general courses in history, mathematics, and science, and the incidental knowledge of biography and history which the various literary courses of the high school and earlier years of the college offer. When the student does enter upon the formal study of administration, he should enter upon it as a specialized branch of economic science. Broadly, such a specialized course should consist in a study of those topics which Professor Jones summarized in perhaps the last third of the paper.

This summary I would put thus:

1. The mechanics of administration or its technique. Here belong the bulk of the books recently written as contributions to the art of factory management. They embrace a treatment largely of the purely muscular and physical factors and conditions.

2. What I infer Professor Jones would wish to describe as the policy of administration and the bases of efficiency. The mental

and ethical factors of efficiency have been least developed and are least studied and understood. Here Professor Jones places so much stress on the mental factors of business administration that we ask whether we are in psychology or economics. Again, I am tempted to ask whether this paper is a study of ethics. Sciences, to be sure, must borrow from each other. What are the rules that will guide the administrator in the successful conduct of his business? My contention here is that we must derive our psychological and ethical guiding principles not only from psychology and ethics, but also from economics and sociology, which are themselves products in large measure of psychical and of ethical analysis.

3. What Professor Jones calls the literature of administration I would cut down by a large common fraction, and select one of a low denomination, thus making a large cut. The literature of administration as revealing the basis of efficiency remains largely yet to be written.

I would venture to urge that in seeking the bases of efficiency we must add to the physical factors which give us the mechanics of administration a study of the mental and moral factors which will give us the dynamics of administration. And in this search for the bases of efficiency, I would insist on the necessity of two side studies, two corrective disciplines,—methods we should perhaps call them rather than sciences. Logical methods we must regard as themselves parts of every concrete science. These two methods or disciplines which can not be ignored or dispensed with in any thoroughgoing system of administration are (1) accountancy or accounting, (2) statistics. What is usually described as cost accounting would generally be more accurately described as managerial statistics.

Let me close with four general observations: (1) The contrasts between military organization and industrial organization are many and striking. (2) Principles derived from military organization must be greatly modified before they can be applied to industrial organization. (3) Leadership must be distinguished from administration both in war and in business. (4) I would consider business administration generic; business management, cost accounting, managerial statistics, salesmanship, and other subdivisions as details or branches of business administration.